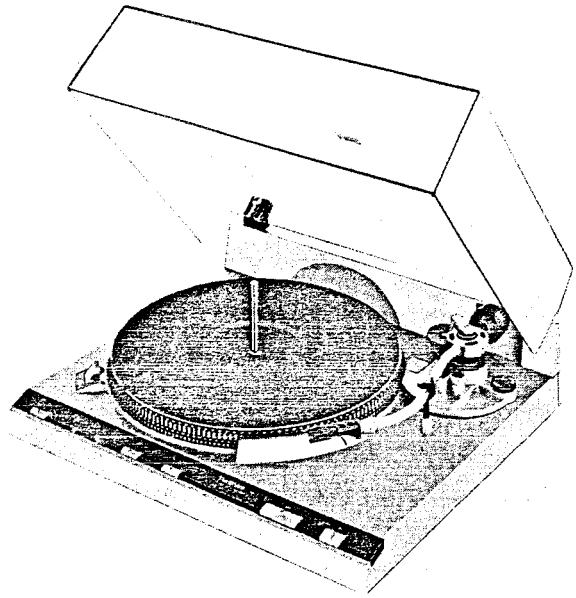
ORDER NO. SD7808-1433

Service Manual

Direct Drive Automatic Turntable System

SL-3350

(X)



The model SL-3350 (X) is available in Asia, Latin America, Middle East and Africa only.

■ SPECIFICATIONS (Specifications are subject to change without notice for further improvement.)

General

Power supply:	~ 110-120/220-240V, 50 or 60 Hz
Power consumption:	4W
Dimensions: (W x H x D)	43.0 x 18.0 x 37.5 cm (16-59/64 x 7-3/32 x 14-49/64 inches)
Weight:	7.3 kg (16.1 lb)

Turntable section

Type:	Direct Drive Automatic Turntable System (Auto-start, Auto-return, Auto-stop, Multiple-play with convenient "memo-gram" knob, Repeat play and Manual play)
Drive method:	Direct Drive
Motor:	Brushless DC motor
Turntable platter:	Aluminum die-cast, 30.4 cm (12")
Turntable speeds:	33-1/3 and 45 rpm
Pitch controls:	Individual adjustment controls, 10% adjustment range
Wow and flutter:	0.03% WRMS (JIS C5521) ±0.042/peak (IEC 98A Weighted)
Rumble:	–53 dB (IEC 98A Unweighted) –73 dB (IEC 98A Weighted)

Tonearm section

Type:	Universal tubular arm, staticbalanced type
Effective length:	230 mm (9-1/16")
Overhang:	15 mm (19/32")
Friction:	Within 7 mg (horizontally and vertically)
Effective mass:	12 g (without cartridge)
Tracking error angle:	Within 2°32' (at the outer groove of 30 cm (12") record) Within 0°32' (at the inner groove of 30 cm (12") record)
Offset angle:	22°
Adjustable stylus pressure range:	0 to 2.5 g (stylus pressure direct reading type)
Cartridge weight range:	6 to 9.5 g (13.5 ~ 17 including headshell)
Headshell weight:	7.5 g

Technics

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

■ PARTS IDENTIFICATION

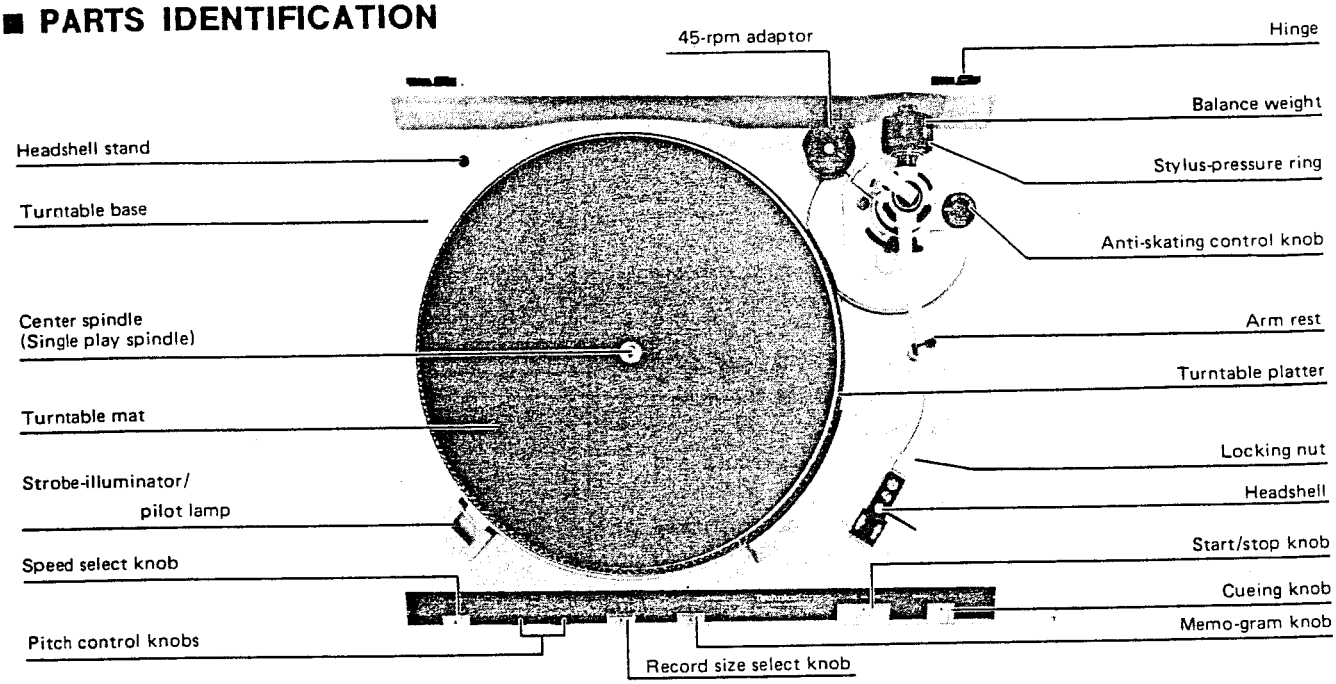


Fig. 1

■ FEATURES

Automatic Changer with Memo-gram

Technics' high load torque D.D. motor maintains its rotational speed accuracy from the first record to the sixth with this automatic changer. The Memo-Gram feature allows a record to be repeated from one to six times, or indifinitely. Your can also use this as a single-play fully-automatic turntable by using the frontpanel Control.

TNRC Base Material Stops Acoustic Feedback

If you have ever experienced howling—caused by acoustic feedback—you know it is the last thing you want your turntable to do. But with our original TNRC base material, it is the last thing you'll have to worry about, even at high volume levels. This unique anti-resonant material is high-molecular compound made by mixing inorganic compounds and special materials.

Compared with ordinary plastic resins or particle board, TNRC exhibits strikingly superior resonance attenuation characteristics and low amplitude of the vibration as well as excellent attenuation to the vibration of the base.

*TNRC . . . Technics Non-Resonance Compound.

Ultra-Low-Speed Direct Drive Motor

The direct-drive of the SL-3200 eliminates the belts, wheels, and other drive elements required by conventional systems. These same belts and so on are notorious sources of vibration, resonance, and cyclical variations in speed. With only one moving part, the D.D. system does away with these sources of disturbance, to provide superbly smooth, constant platter rotation.

Integral Rotor-Platter Structure

To further simplify the turntable design, the platter and rotor are formed into a single, continuous unit. By eliminating a linkage point, this prevents the potentially disturbing effects of looseness or maladjustment between platter and rotor.

All Front-Panel Controls

The advancement to complete front-panel control marks a big step forward in turntable operation, not only because of the greater convenience, but also because of the greater protection from dust, as the dust cover can stay closed.

Tonearm Cueing Controlled from Front Panel

The tonearm is raised and lowered softly by a viscous-damped cueing lifter. Even with the dust cover closed, a cueing can be easily performed as the control is located on the front panel.

High Sensitive Gimbal Suspension

The recently developed high sensitivity tonearm bearings featured in this unit achieve a very high degree of performance. In addition, the universal-type detachable headshell features all gold-plated pin connections to ensure unwavering reliability through many years of use.

Independent Pitch Controls

Permits record speed (at both 33-1/3 and 45 rpm) to be varied by up to 10%.

Precision Strobe Illuminator/Pilot Lamp

With the built-in strobe illuminator/pilot lamp, accurate speed adjustments can be made rapidly and easily.

Anti-Skating Force Mechanism

The well-designed anti-skating force mechanism ensures minimum side thrust with different cartridges and guarantees accurate center-of-the-groove tracking.

Fully-Automatic Operation

All operations in the SL-3350 are completely automatic, yet mechanical movements are accurate and silent. Full protection to records and stylus tip is assured. With the memo-repeat feature, favorite records may be repeated up to six times, or indefinitely.

Detachable Dust Cover

■ HOW TO OPERATE

Single-play

Manual play of a record

1. Install the single-play spindle to the shaft **(See Fig. 2.)**
2. Place a record on the turntable mat.
3. Set the speed select knob to the desired record speed. **(See Fig. 3.)**
4. Remove the stylus protector, if your cartridge has a detachable one.
5. Release the arm clamp.
6. Set the cueing knob to the "▼" position. **(See Fig. 4.)**
7. Move the tonearm over the record and set the cueing knob to the "▼" position. **(See fig. 5.)**
   The tonearm will descend slowly onto the record and play will begin.
8. When play is finished, the tonearm will automatically return to the arm rest (auto-return), and the turntable platter will stop rotation.
   The turntable platter will continue to rotate briefly due to its own inertia.
   Note:
   If the **"memo-gram"** knob is in a position other than **"0"**, play will be repeated by the number of times set; therefore, be sure to keep the **"memo-gram"** knob in the **"0"** position.
   If the unit is not to be used for some time, set the speed select knob to the neutral "•" position.
   Attach the stylus protector again, if you have one, to guard the stylus tip from damage.

Fully automatic single-play

1. Set the speed select knob in the same manner as in manual play and release the arm clamp.
2. Set the record size select knob to the diameter of the record (7" (17 cm), 10" (25 cm) or 12" (30 cm)) you wish to play **(See Fig. 6.)**
3. Set the start/stop knob to the **"start"** position. **(See Fig. 7.)**
   The tonearm will move automatically over the lead-in groove and descend slowly to the record (auto-start). Play will begin.
   Note:
   - In this case, the **"start/stop"** knob will automatically return to the neutral position after play has begun.
4. When play has finished, the tonearm will automatically return to the arm rest (auto-return)

Repeat play of a single record

1. Set the **"memo-repeat"** knob to the desired number of times you wish to play. **(See Fig. 8.)**
   "R" position enables you to repeat play continuously.
2. Start play in the same way as for fully automatic single-play.

Note:

- The **"memo-gram"** knob may be set to a desired number, except during automatic start or automatic return cycle.
- If you start play manually while the **"memo-gram"** knob is set to a number, there will be an additional repeat play.

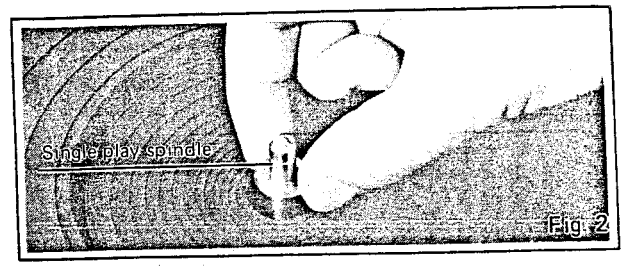


Fig. 2

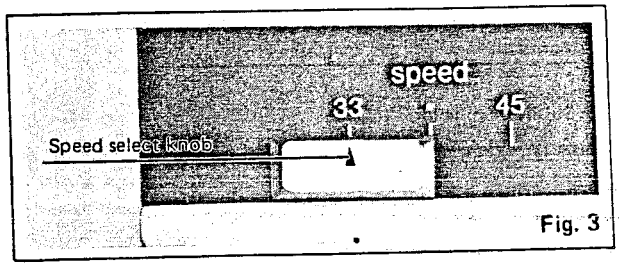


Fig. 3

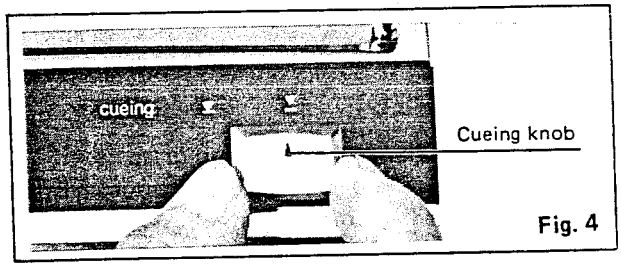


Fig. 4

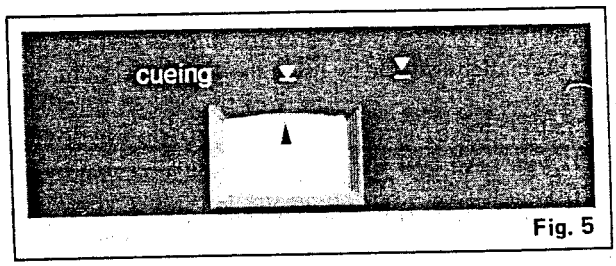


Fig. 5

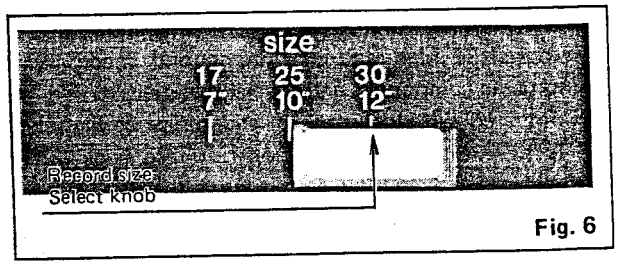


Fig. 6

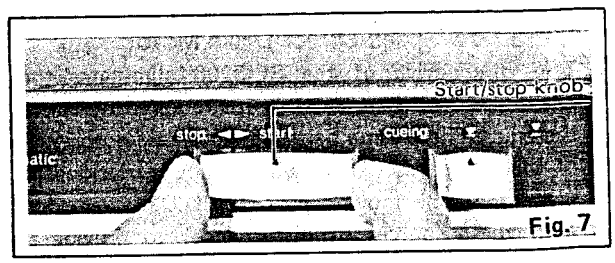


Fig. 7

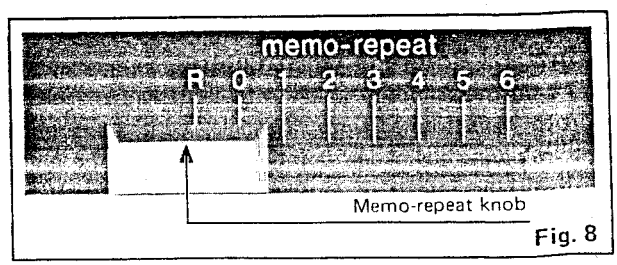


Fig. 8

How to stop play

Set the start/stop knob to the **"stop"** position. **(See Fig. 9.)** The tonearm will automatically return to the arm rest and the turntable will stop rotating.

Of course, the unit will automatically shut off even when the tonearm is manually returned to its arm rest directly.

Note:

- Before you operate the start/stop knob, make sure that the **"memo-gram"** knob is set at the "0" positoon.
  If this knob is set at any position other than **"0"**, the repeat play is continued by the number of times indicated, even if you set the start/stop knob to the **"stop"** position.

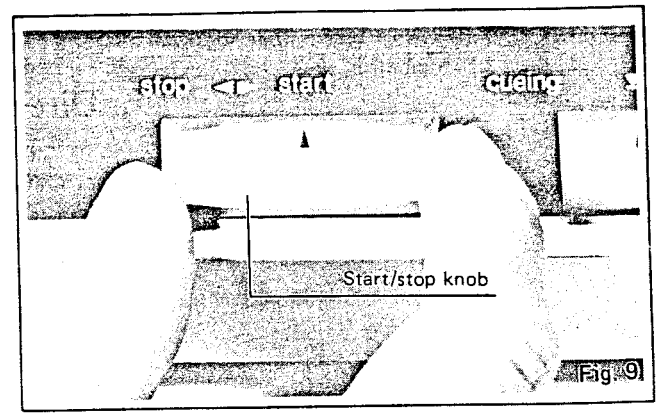


Fig. 9

How to suspend play

Set the cueing knob to the "▼" position.

The stylus tip of the cartridge will be lifted from the record.

When you play a 45-rpm record with a large center hole

In the case of **"single-play"**, place the 45-rpm adaptor for single-play on the regular single-play spindle.

In the case of **"multiple-play"**, insert the 45-rpm multiple-play adaptor into the shaft, in the same manner as the regular multipleplay spindle.

Multiple-disc operation

1. Insert the multiple-play spindle, aligning the key at its base with the slot of the shaft. **(See Figs. 10 and 11.)**
   Then, pushing downward, rotate the spindle colckwise until it stops.
   To remove the spindle, push it down, turn counterclock-wise until it feels loose and lifts upwards.
   Before removing the multiple-play spindle, always make certain that records are removed first.
2. Stack records of the same size on the fingers of the multiple-play spindle. Never mix different record diameters.
3. Count the number of records stacked, then set the **"memo-gram"** knob to the number corresponding to the records; i.e., when you stack three records, set the **"memo-gram"** knob to the **"3"** position. **(See Fig. 12 and 13.)**
   When you stack a single record on the multiple-play spindle, you need not set the **"memo-gram"** knob.
4. Start play in the same way as for fully automatic single-play.
   Note:
   If the start/stop knob is set to the **"stop"** position while there are still records on the spindle, the next record will drop.
   You must therefore rest this record on the multiple-play spindle to play it subsequently.

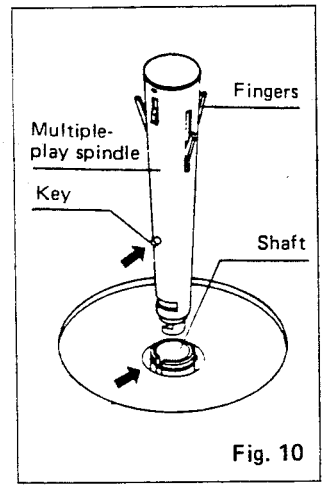


Fig. 10

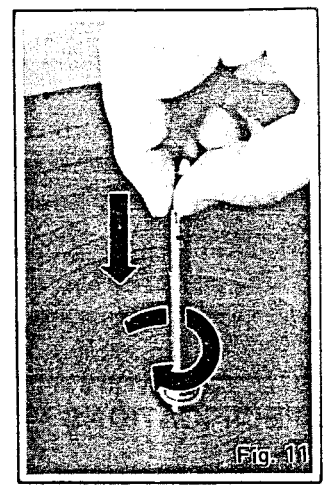


Fig. 11

Note:

- Never insert or remove the multiple-play spindle when the automatic mechanism is in operation or engaged.

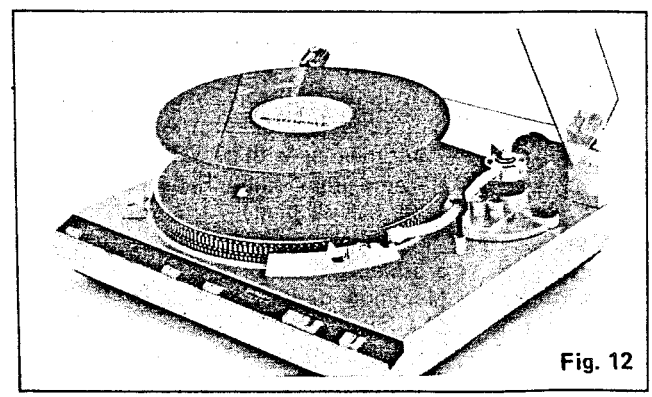


Fig. 12

Multiple-disc plus repeat play

Set the **"memo-gram"** knob to the **"R"** position for multiple-disc, and you can play the last record repeatedly (repeat).

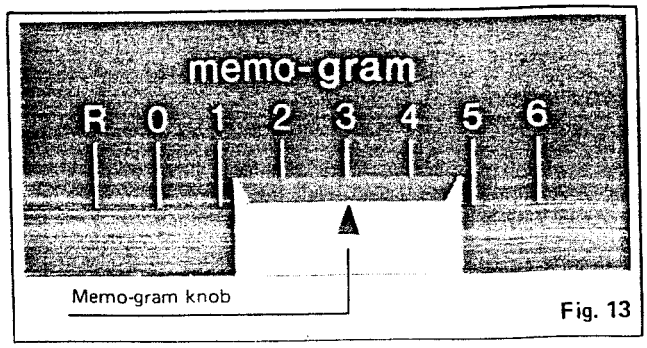


Fig. 13

■ ADJUSTMENTS

Adjustments of horizontal zero (0) balance and stylus pressure

1. Before adjusting horizontal zero (0) balance, check the following:
   Make sure that the speed select knob is in the "•" (neutral) position.
   Make sure that the cueing knob is in the "▼" position.
   Make sure that the anti-skating control knob is at "0" position.
   Make sure that the "**memo-repeat**" knob is in the "0" position.
2. Remove the stylus protector, if your cartridge has a detachable one.
   Be careful not to touch your fingers to the stylus tip.
3. Release the arm clamp and lift the tonearm from the arm rest to free it.
   Turn the entire balance weight clockwise (indicated by the arrow "A") or counterclockwise (indicated by the arrow "B") until the tonearm is approximately balanced horizontally (floats freely). **(See Figs. 14 and 15.)**

Note:

- During the adjustment of the horizontal zero (0) balance, be careful that the stylus tip of the cartridge does not contact the turntable mat or turntable base.

4. After the tonearm is horizontally zero (0) balanced, temporarily refasten the tonearm with the arm clamp.
5. Hold the balance weight stationary with one hand as shown in the picture, and rotate only the stylus-pressure ring to bring the numeral "0" of the ring into alignment with the center line on the tonearm rear shaft.
   The adjustment of the horizontal zero (0) balance is now completed. **(See Fig. 16.)**
6. After adjusting the horizontal zero (0) balance, turn the balance weight clockwise in the direction of the arrow and align to the correct stylus pressure. **(See 17.)**
   (Follow the cartridge manufacturer's recommendation.)
   As the stylus-pressure ring moves in step with the balance weight, proper stylus pressure can be selected by directly reading the graduated ring.

Note:

- Set the stylus pressure to the maximum recommended value for your cartridge in cases where the record has an extremely high recording level, or where the unit is operated in a room at low temperature, or in places in which the unit is subjected to vibrations.

Adjustment of anti-skating control

Set the anti-skating control knob to the same value as the stylus pressure. **(See Fig. 18.)**

Note:

- When a cartridge with integral dust brush is used, follow the cartridge manufacturer's recommendation for adjusting both stylus pressure and anti-skating force.

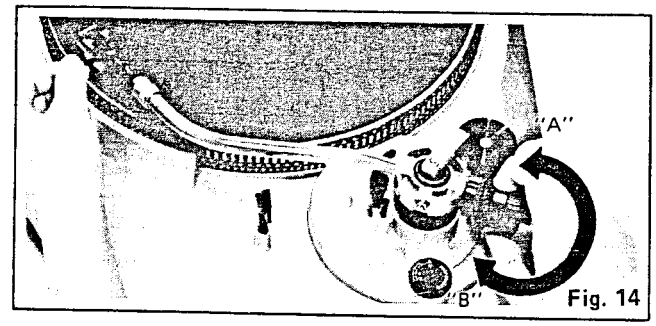


Fig. 14

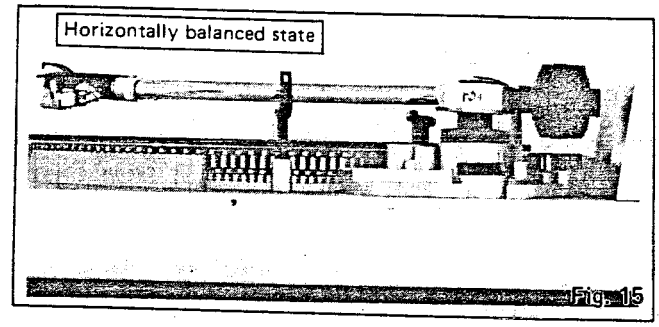


Fig. 15

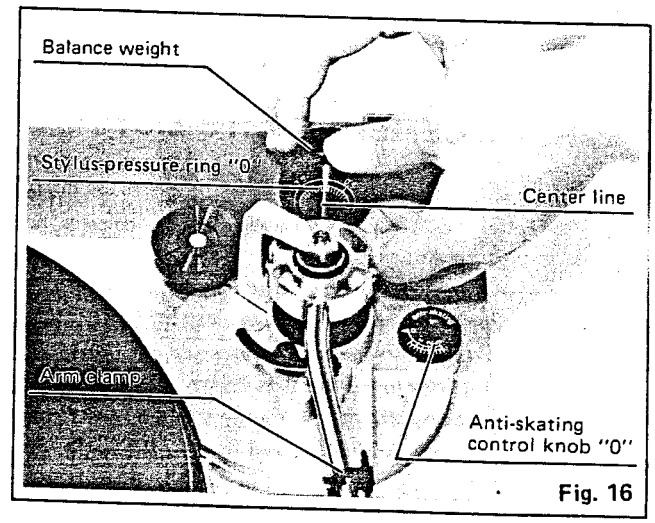


Fig. 16

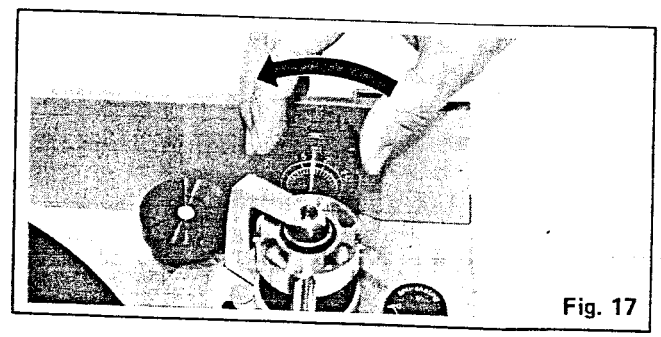


Fig. 17

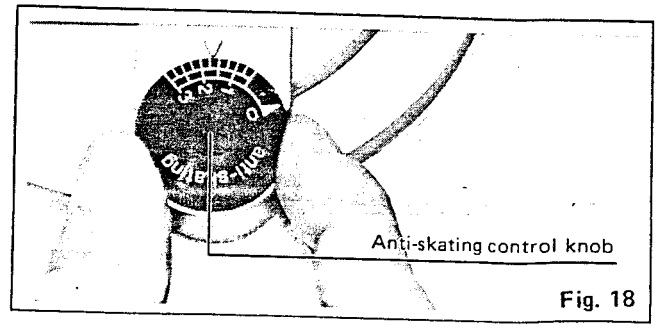


Fig. 18

Adjustment of arm-lift height

The arm-lift height (distance between the stylus tip and record surface when cueing knob is at "▼" has been adjusted at the factory before shipping to approximately 15 mm. For using different cartridges available on the market or when further adjustments are particularly necessary, make adjustment as follows:

1. Set the speed select knob to the "•" position to prevent rotation of the turntable platter.
2. Move the tonearm towards the center spindle.
3. Turn the adjustment screw clockwise or counterclockwise, while pushing the arm lift down. **(See Fig. 19.)**

   Clockwise rotation

   – distance between the record and stylus tip is reduced.

   Counterclockwise rotation

   – distance between the record and stylus tip is increased.

Note:

- As the adjusting screw has a hexagonal head, be sure to make the adjustment while depressing the arm lift, or the screw will not move freely. Also be sure that the hexagonal head retracts correctly into the arm lift when the latter is released.

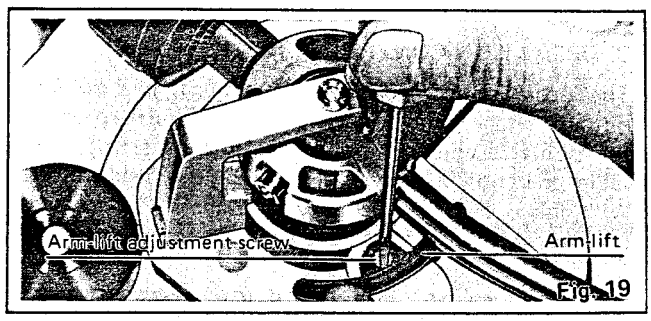


Fig. 19

Speed adjustment (with pitch control knobs)

Strobe dots are set on the rim of the turntable platter according to the power-line frequency and the speed of the records. Make adjustment, referring to strobe-dot indication.

1. Place a record on the turntable mat.
2. Set the speed select knob to the speed to be adjusted.
3. Adjust the speed while playing a record.
   The strobe-illuminator/pilot lamp will be lit for illuminating the strobe dots.
4. While turning the pitch control knobs either to "+" side or "–" side, adjust so that the strobe dots of the turntable platter look as if they were stationary. The state under which the strobe dots seem to be stationary represents the correct number of revolutions.

"+" direction

This increases the speed of the turntable rotation, and the strobe dot pattern seems to flow in the same direction as the rotational direction of the turntable platter.

"–" direction

This decreases the speed of the turntable rotation, resulting in a state opposite to that in the "+" direction.

Note:

Strobe dot pattern

The strobe-illuminator/pilot lamp of this unit employs the commercially available power source. The frequency of such power source, when actually measured, has a fluctuation of about 0.2%. As such a fluctuation of the power source affects the strobe illuminator, the strobe dot pattern also seems to fluctuate to a certain extent.

But the unit is not affected by these fluctuations of the power source, since a DC motor is employed. In other words, rotation of the platter will be constant, and slight shifts in the movement of the dots simply reflect normal drift in the power-source frequency.

Adjustment for automatic start and return positions

Should the tonearm not function correctly, make adjustments according to the following procedures.

Adjustment for automatic start position

(Remove the rubber cap.)

In cases where the stylus tip descends outside of the record
-Rotate clockwise.

In cases where the stylus tip descends onto halfway of a recorded piece
–Rotate counterclokwise.

Adjustment for automatic return position (See Fig. 20.)

(Remove the turntable mat.)

In cases where the tonearm tends to return before playing has finished.

– **Rotate clockwise.**

In cases where the tonearm fails to return after the last groove of the record.

– **Rotate counterclockwise.**

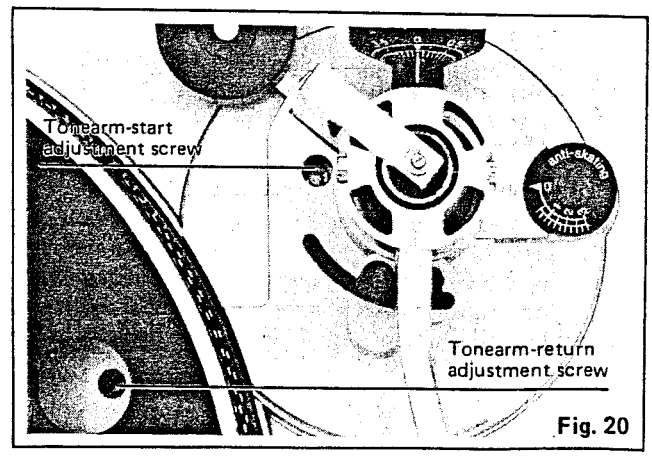


Fig. 20

■ OPERATION PRINCIPLES OF THE SL-3350

This unit, like the SL-1300 has a rational motor structure, and its drive control circuit is the B.F.G. type (Back electromotive force frequency generator) which is constructed on a single integrated Circuit (IC) chip(AN630). The following is a block diagram of the IC (AN630) for which the operating principle will be briefly explained.

■ OPERATING PRINCIPLE

The back electromotive force, which is generated by the drive coil winding according to the rotation of the motor, is detected and converted to a frequency signal that is proportional to the number of revolutions.
Conversion is performed by a wave-shaping circuit and a logic circuit (This is referred to as the B.F.G. method).
This frequency signal is compared with a standard signal by means of a frequency-voltage conversion circuit which converts it to a voltage singal in order maintain a constant number of revolutions.

After removing unnecessary frequency components, with the operational-amplifier active filter, from this voltage signal, it controls the current flow in three differential switching circuits. As a result, the flow of current in the drive coil winding is always constant maintaining the correct rotational speed. Control of the rotational speed can be performed by means of adjusting the standard signal generator circuit according to the rotational speed adjustment circuit.

■ EXPLANATION OF EACH PART

1. B.F.G. METHOD (BACK ELECTROMOTIVE FORCE FREQUENCY GENERATOR)

Making use of the back electromotive force that is generated in the drive coil winding of the motor as a frequency generator, the frequency of the frequency generator is converted to the number of revolutions for the turntable.
After shaping the wave form of this back electromotive force, it is composed logically, and a frequency is generated that is proportional to the number of revolutions. This is the use of the B.F.G. Making use of the drive coil winding, frequency generator coil windings and magnets are not necessary, yielding a motor structure that is very compact.

2. FREQUENCY-VOLTAGE CONVERSION CIRCUIT

Being composed of a trapezoldal wave generating circuit, a pulse generating circuit and a sampling integration circuit, the B.F.G. output frequency is converted to a voltage, and control output voltage is generated in order to maintain the rotational speed of the turntable at a constant level.

3. OPERATION CONTROL CIRCUIT

The operation control circuit functions as a control output voltage control keeping the rotational speed of the turntable constant with regard to the start of turntable operation and the operation of the mechanism. With this circuit, transient response characteristics and starting characteristics are very good.

4. OPERATIONAL AMPLIFIER (OP AMP) ACTIVE FILTER

Because of using an operational amplifier in the active filter, an ideal filter operation is possible.
As a result, such high performance as a signal-to-noise (SN) ratio of 60 dB (IEC-B) and a wow-and-flutter level of 0.03% (WRMS) have been achieved.

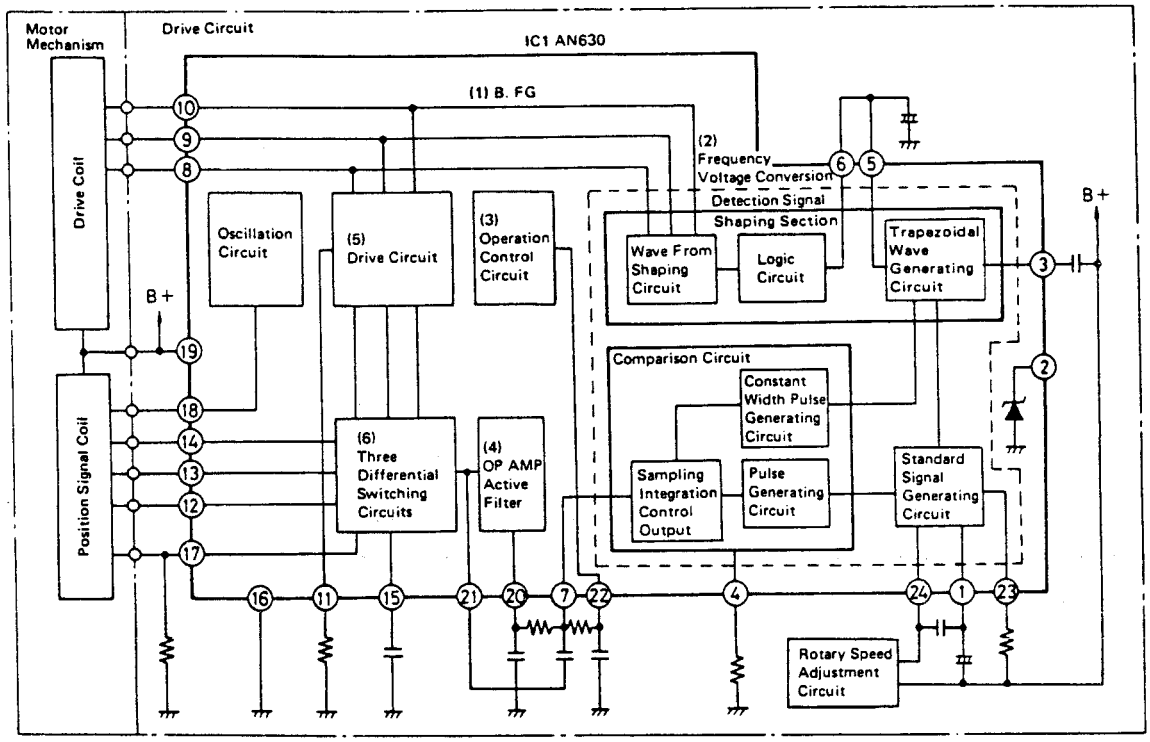
5. DRIVE CIRCUIT

By incorporating a large capacity power transistor in the integrated circuit, a starting torque of 1 kg-cm can be obtained. By means of this large starting torque, prompt starts have been realized.

6. THREE DIFFERENTIAL SWITCHING CIRCUITS

By means of the signal from the position signal coil, the starting circuit power transistor selector operates, obtaining smooth rotation.

■ BLOCK DIAGRAM



■ REPLACEMENT PARTS LIST

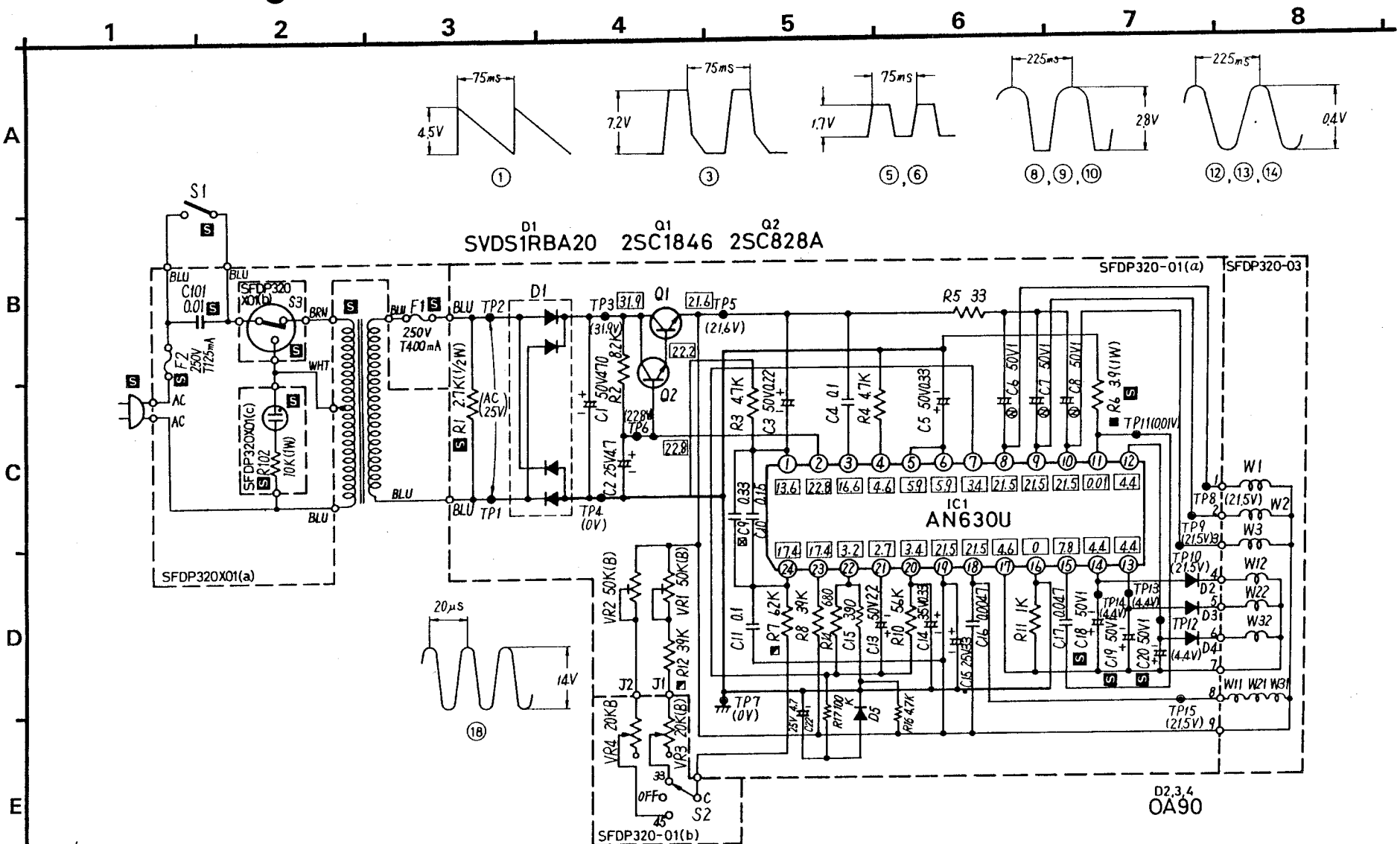
NOTES: 1. Part numbers are indicated on most mechanical parts.
Please use this part number for parts orders.

2. ⓢ indicates that only parts specified by the manufacturer be used for safety.

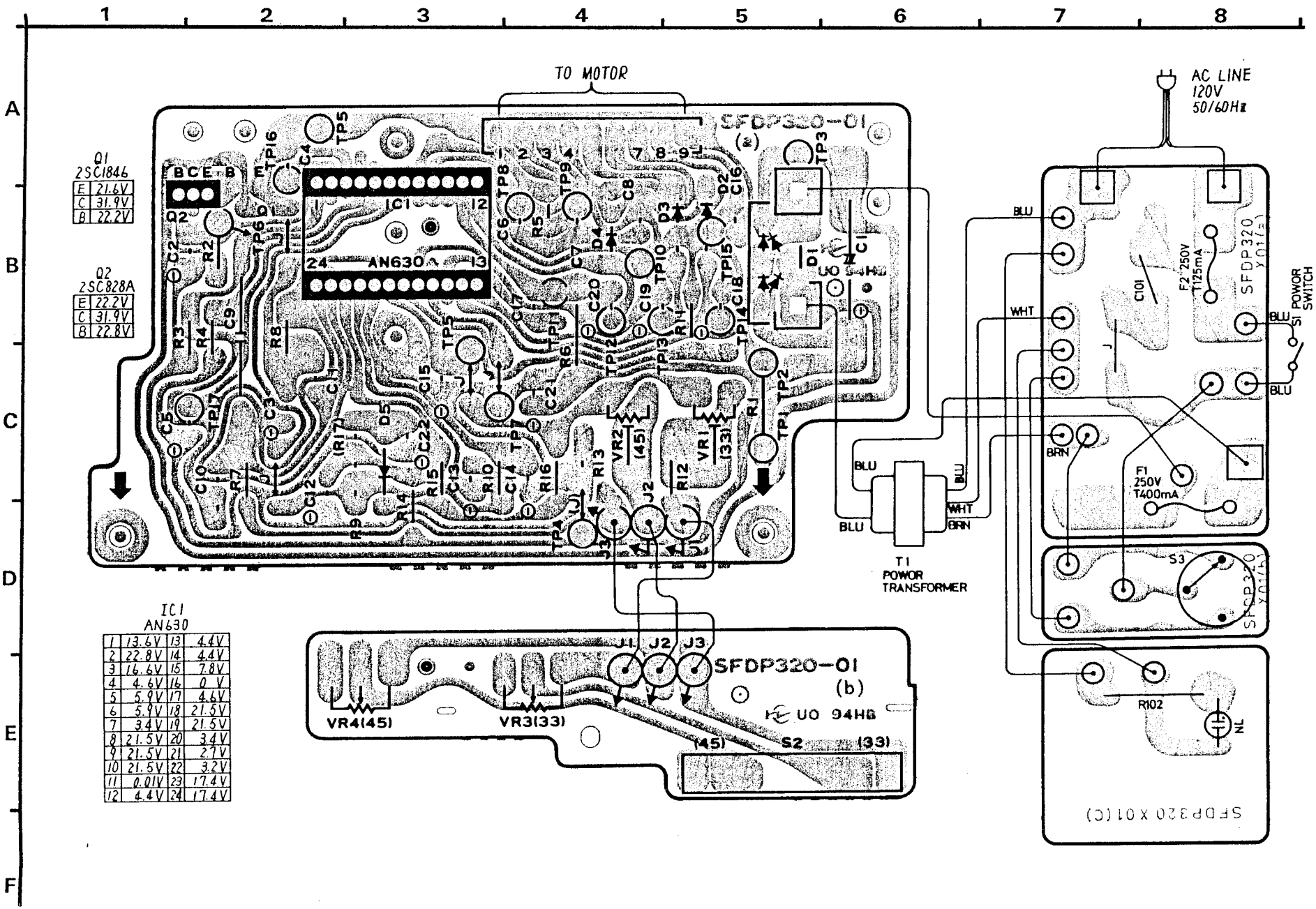
Ref. No.		Part No.	Part Name & Description
INTEGRATED CIRCUIT			
IC1		AN630U	Integrated Circuit
TRANSISTORS			
Q1		**2SC1846-Q**	Transistor
Q2		**2SC1328-T**	Transistor
DIODES			
D1	ⓢ	SVDS1RBA20	Rectifier
D2, 3, 4		OA90	Diodes
D5		MA150	Diode
TRANSFORMER			
T1	ⓢ	SLTF5352A	Power Transformer
LAMP			
NL1	ⓢ	SFDNE2HU	Neon Lamp
SWITCHES			
S1	ⓢ	SFDSAH764039	Switch, Power
S2		EVAL06SBBAAF	Switch, Speed Selector
S3	ⓢ	SFDSHXW13312	Switch, Power Source Selector
FUSE			
F1	ⓢ	XBA2C04TR0	400mA, Fuse
F2	ⓢ	XBA2C012TR0	125mA, Fuse
VARIABLE RESISTORS			
VR1, 2		EVLS3AA00B54	50kΩ, Pitch Control
VR3, 4		EVHX8AF15B24	20kΩ, Speed Control

Ref. No.		Part No.	Part Name & Description			
RESISTORS						
R1	ⓢ	ERD50TJ272	Carbon,	2.7kΩ,	1/2W,	± 5%
R2		ERD25TJ822	Carbon,	8.2kΩ,	1/4W,	± 5%
R3, 4		ERD25TJ472	Carbon,	4.7kΩ,	1/4W,	± 5%
R5		ERD25TJ330	Carbon,	33Ω,	1/4W,	± 5%
R6		ERX1ANJ3R9	Metallic,	3.9Ω,	1W,	± 5%
R7	ⓢ	ERO25CKF6202	Metallic,	62kΩ,	1/4W,	± 1%
R8		ERD25TJ393	Carbon,	39kΩ,	1/4W,	± 5%
R10		ERD25TJ563	Carbon,	56kΩ,	1/4W,	± 5%
R11		ERD25TJ102	Carbon,	1kΩ,	1/4W,	± 5%
R12		ERO25CKF3902	Metallic,	39kΩ,	1/4W,	± 1%
R14		ERD25TJ681	Carbon,	680Ω,	1/4W,	± 5%
R15		ERD25TJ391	Carbon,	390Ω,	1/4W,	± 5%
R16		ERD25TJ472	Carbon,	4.7kΩ,	1/4W,	± 5%
R17		ERD25TJ104	Carbon,	100kΩ,	1/4W,	± 5%
R102	ⓢ	ERG1ANJ103	Metallic,	10kΩ,	1W,	± 5%
CAPACITORS						
C1		ECEB1HS471	Electrolytic,	470μF,	50V	
C2		ECEA1JS4R7	Electrolytic,	4.7μF,	63V	
C3		ECEA50ZR22	Electrolytic,	0.22μF,	50V	
C4		ECQM1H104KZ	Polyester,	0.1μF,	50V,	±10%
C5		ECEA50ZR33	Electrolytic,	0.33μF,	50V	
C6, 7, 8		ECEA50N1	Electrolytic,	1μF,	50V	
C9		ECQF2334KZ	Polyester,	0.33μF,	200V,	±10%
C10		ECQM1H154KZ	Polyester,	0.15μF,	50V,	±10%
C11		ECQM1H104KZ	Polyester,	0.1μF,	50V,	±10%
C13		ECEA50M2R2R	Electrolytic,	2.2μF,	50V	
C14		ECSZ35EFR33	Electrolytic,	0.33μF,	35V	
C15		ECEA1VS330	Electrolytic,	33μF,	35V	
C16		ECQM1H472KZ	Polyester,	0.0047μF,	50V,	±10%
C17		ECQM1H473KZ	Polyester,	0.047μF,	50V,	±10%
C18, 19, 20	ⓢ	ECEA2AS010	Electrolytic,	1μF,	100V	
C22		ECEA25M4R7R	Electrolytic,	4.7μF,	25V	
C101		ECQE2A103MZ	Polyester,	0.01μF,	250V,	±20%

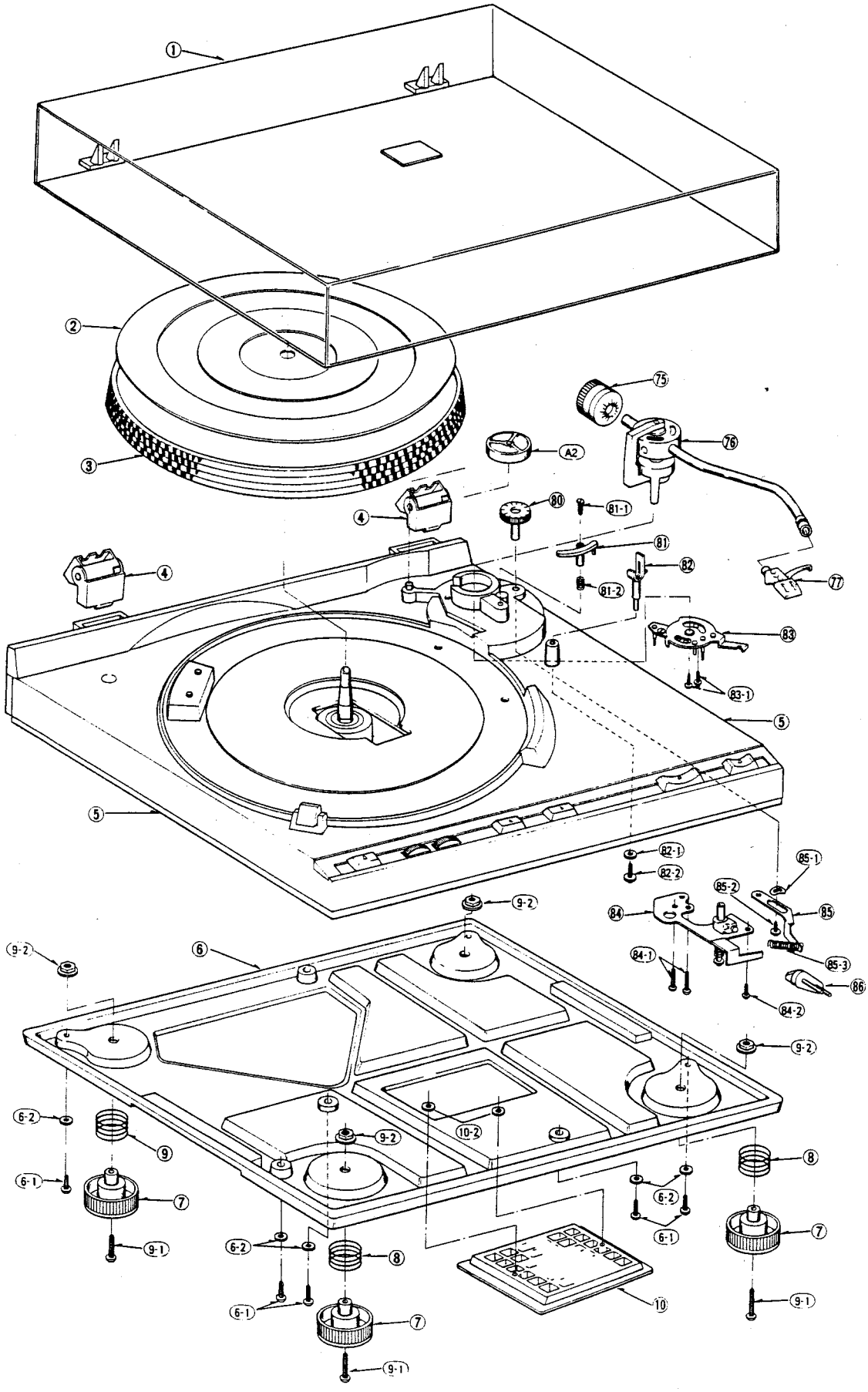
Schematic Diagram (This schematic diagram may be at any time with the development of new technology.)



Printed Circuit Board



■ EXPLODED VIEWS

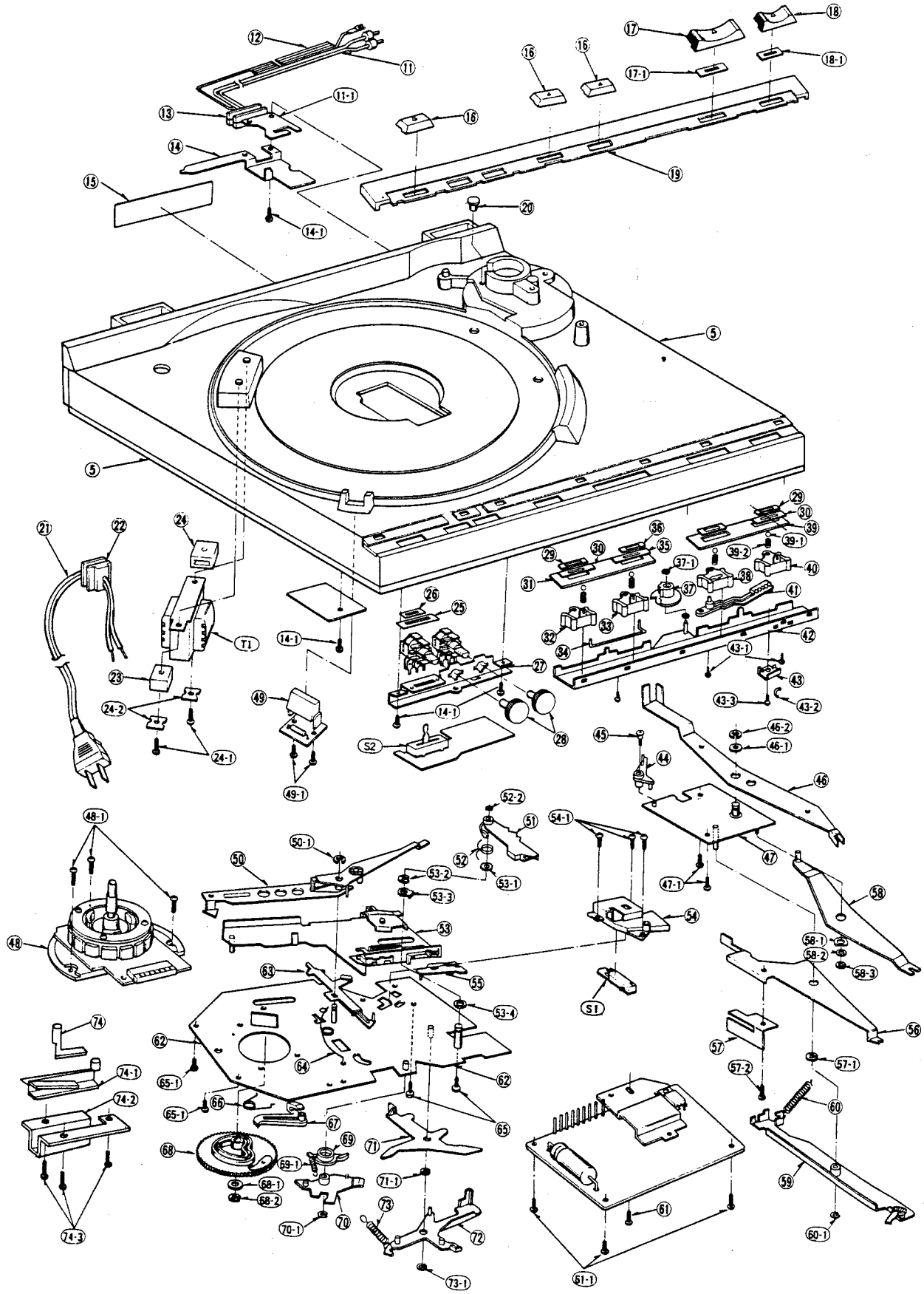


■ REPLACEMENT PARTS LIST

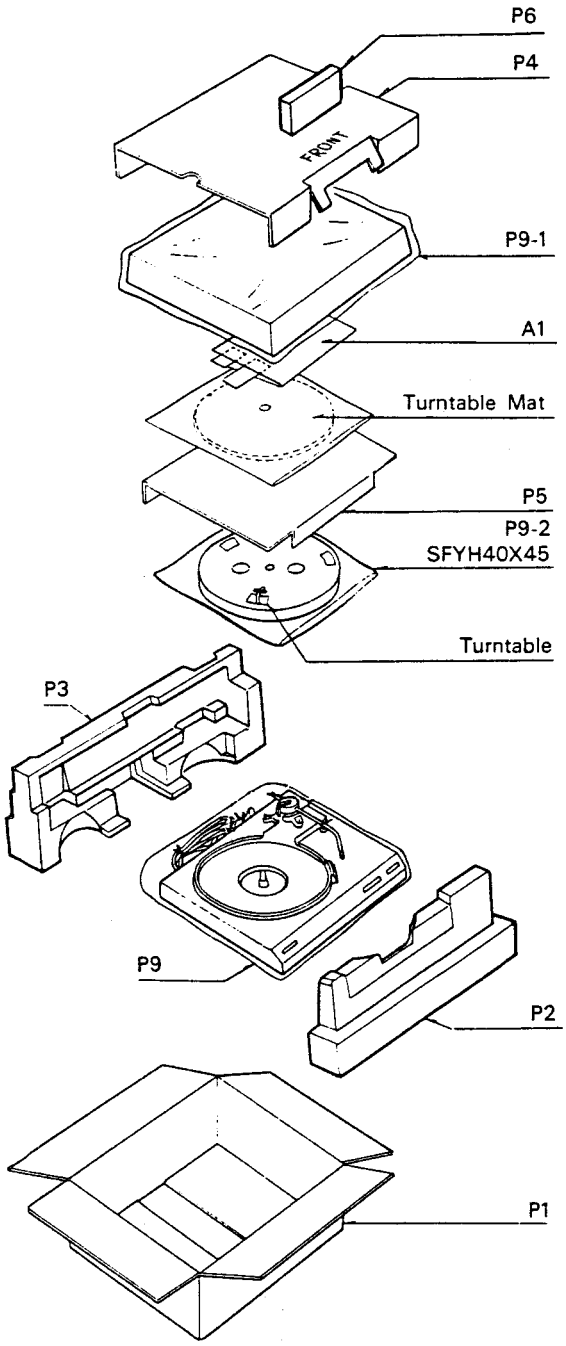
Notes: 1. Part numbers are indicated on most mechanical parts.
Please use this part number for parts orders.
2. ■ indicates that only parts specified by the manufacturer be used for safety.

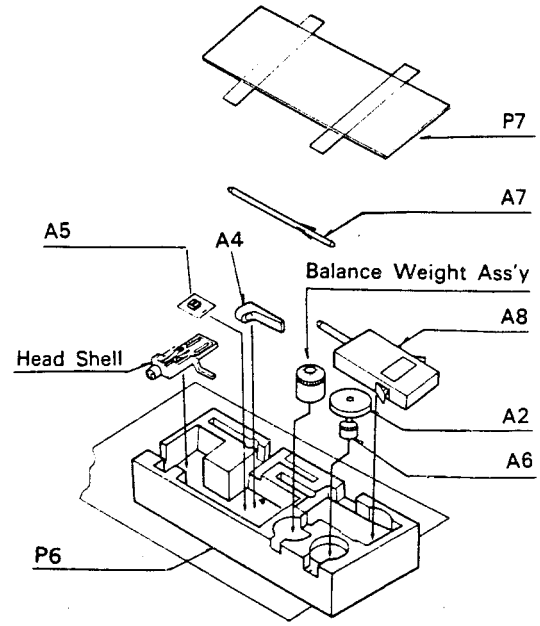
Ref. No.		Part No.	Part Name & Description
CABINET and CHASSIS PARTS			
1		SFAD195-01E	Dust Cover
2		SFTG335-01	Turntable Mat
3		SFTE335-01A	Turntable
4		SFAT195-01A	Hinge Ass'y
5		SFAC335-01	Cabinet
6		SFAU335-01	Bottom Board
6-1		XTN3+20B	Screw, Bottom Board
6-2		XWG3	Washer, Bottom Board
7		SFGA235-01E	Audio Insulator
8		SFQC200-01	Spring, Audio Insulator (Front)
9		SFQC320-01	Spring, Audio Insulator (Rear)
9-1		XSN3+14S	Screw, Audio Insulator
9-2		SFXN320-01	Nut, Audio Insulator
10		SFUM320-02	Cover, Bottom Board
10-1		SFXG132-02	Screw, Cover
11		SFDH212-01	Phono Cord
11-1		SFDP212-02	P.C.B., Phono Cord
12		SFEL028-01E	Ground Wire
13		SFUM212-08	Clamper, Phono Cord
14		SFUP320-01	Plate, Shield
14-1		XTV3+10C	Screw
15		SFNN335**X01**	Name Plate
16		SFKT320-03	Knob, Speed Select
17		SFKT320-01	Knob, Stop
17-1		SFXW212-02	Washer, Stop Knob
18		SFKT320-02	Knob, Cueing
18-1		SFXW212-01	Washer, Cueing Knob
19		SFKK335-01	Panel
20		SFGK170-01	Cap, Rubber
21	■	**RJA23ZC**	AC Cord
22		SFUM190-11	Bushing, AC Cord
23		SFGC320-02	Supporter, Power Transformer (A)
24		SFGC320X01	Supporter, Power Transformer (B)
24-1		XTV3+10C	Screw, Power Transformer
24-2		SFUP320-04	Supporter, Power Transformer (C)
24-3		SFUP320-06	Plate, Power Transformer
25		SFUP212-13	Shutter (A)
26		SFUP212-07	Shutter (B)
27		SFUP212-11	Plate, Speed Adjustment
28		SFKT212-02	Knob, Pitch Control
29		SFUP212-07	Shutter (B)
30		SFUZ320-01	Shutter (A)
31		SFUM212-02	Plate, Operation
32		SFUM230-01E	Selector, Slider Ass'y
33		SFUM212-03E	Slider Ass'y, (A)
34		SFQS230-01	Selector Lod
35		SFUP230-01	Shutter (A), Repeat
36		SFUP230-02	Shutter (B), Repeat
37		SFUM230-04	Cam, Repeat
37-1		**XUC3FT**	Circlip, Repeat Cam
38		SFUP212-20E	Slider Ass'y, (B)
39		SFUM230-02	Plate, Repeat
39-1		SFYB5-32	Ball, Slider Ass'y
39-2		SFQA130-11	Spring, Slider Ass'y
40		SFUM212-03E	Slider Ass'y, (A)
41		SFUM230-03E	Repeat Ass'y
42		SFUK230-01E	Operation Support Ass'y
43		SFUP230-05	Bracket, Select Lod
43-1		XTN3+20C	Screw
43-2		SFGZ230-01	Rubber, Select Lod Bracket
43-3		XTN3+10B	Screw, Select Lod Bracket
44		SFUM230-07	Lever, Stop
45		SFPJK15002	Screw, Stop Lever
46		SFUP212-04	Lever, Cueing
46-1		SFXW190-22	Washer, Cueing
46-2		**XUC5FT**	Circlip, Cueing
47		SFUK230-02E	Plate, Cueing
47-1		XTV3+10C	Screw, Cueing Lever Plate
48		SFMZ335-01Z	Stater Frame Ass'y
48-1		XTN3+10B	Screw
49		SFUM320-01	Cover, Neon
49-1		XTN3+10B	Screw, Neon Cover
50		SFUC320-11E	Actuating Plate Ass'y
50-1		**XUC3FT**	Circlip, Actuating Plate Ass'y
51		SFUM230-12	Index Plate
52		SFQS230-11	Spring, Index Plate
52-1		SFXW831-5	Washer, Index Plate
52-2		**XUC5FT**	Circlip, Index Plate
53		SFUB230-11A	Operating Plate ass'y
53-1		SFXW230-11	Washer, Operating Plate Ass'y
53-2		**XUC5FT**	Circlip, Operating Plate Ass'y
53-3		SFXW130-13	Washer, Operating Plate Ass'y
53-4		SFXW623-02	Washer, Operating Plate Ass'y
54		SFUM222-14	Cover, Switch
54-1		XTN3+8B	Screw, Switch Cover
55		SFUM222-15	Plate, Switch
56		SFUP222-01	Lever, Start
57		SFQP230-01	Supporter, Start Lever
57-1		**XUC3FT**	Circlip, Start Lever
57-2		XTN3+5B	Screw, Start Lever
58		SFUP230-04E	Select Lever Ass'y
58-1		SFXW910-08	Washer, Select Lever Ass'y
58-2		XWE4G10	Washer, Select Lever Ass'y
58-3		**XUC3FT**	Circlip, Select Lever Ass'y
59		SFUP230-03A	Lever, Searching
60		SFQS230-13	Spring, Searching Lever
60-1		**XUC3FT**	Circlip, Searching Lever
61		XTN3+8B	Screw, Heat Sink
61-1		XTV3+10C	Screw, P.C.B
62		SFUK320-11E	Automatic Mechanism Ass'y
63		SFUM222-13	Plate, Stop
64		SFQS222-12	Spring, Stop Plate
65		XTV3+35C	Screw, Automatic Mechanism Ass'y
65-1		XTV3+10C	Screw, Automatic Mechanism Ass'y
66		SFQS222-11	Spring, Supporter
67		SFUM222-11	Supporter, Gear Setting
68		SFUG190-22E	Main Gear Ass'y
68-1		SFXW890B01	Washer, Main Gear Ass'y
68-2		**XUC5FT**	Circlip, Main Gear Ass'y
69		SFUM230-14	Pin, Switch Supporter
69-1		SFQH130-14	Spring, Switch Supporter
70		SFUM230-13	Supporter, Switch
70-1		**XUC3FT**	Circlip, Switch Supporter
71		SFUM222-16	Lever, Switch
71-1		**XUC3FT**	Circlip, Switch Lever
72		SFUM230-11	Plate
73		SFQH910-11	Spring Plate
73-1		**XUC3FT**	Circlip, Plate
74		SFUM235-03	Support, Spindle
74-1		SFUM165-01	Cam, Spindle
74-2		SFUP335-01	Holder, Spindle
74-3		XYN3+C8	Screw, Spindle Holder
TONE ARM			
75		SFPWG21001K	Balance, Weight Ass'y
76		SFPAM31001K	Tone Arm Ass'y
77		SFPCC31001K	Head Shell
78		EPC270C2K-X	Cartridge
79		EPS270ED	Stylus
79-1		SFPEV7803	Screw, Cartridge
79-2		SFPEW9601	Washer, Cartridge
79-3		SFPEN3302	Nut, Cartridge
ARM BASE			
80		SFPJK19004	Knob, Anti-skate Force Control
81		SFPRT13004K	Lift Ass'y
81-1		SFXG829-1	Screw, Tone Arm Lift Adjustment
81-2		SFQA829-03	Spring, Lift Ass'y
82		SFKU212-01E	Arm, Rest
82-1		XWG3	Washer, Arm Rest
82-2		XTN3+14BFZ	Screw, Arm Rest
83		SFUP320-05A	Tone Arm Fixing Plate Ass'y
83-1		SFPEV13204	Screw, Tone Arm Fixing Plate Ass'y
84		SFUP320-03A	Bracket, Lift Ass'y
84-1		XTN4+12B	Screw, Lift Ass'y Bracket
84-2		XTN3+10B	Screw, Lift Ass'y Bracket
85		SFUP212-02	Plate, Anti-skate Force Control
85-1		SFQP212-02	Washer, Plate
85-2		SFXG212-04	Screw, Plate
85-3		SFPSP13102	Spring, Anti-skate Force Control
86		SFUM212-01	Cam, Cueing

■ EXPLODED VIEW



■ PACKINGS





■ REPLACEMENT PARTS LIST

Ref. No.		Part No.	Part Name & Description
ACCESSORIES			
A1		SFNU335X01	Instruction Book
A2		SFWE212-01	Adaptor, 45 r.p.m.
A3		SFDKI19118	Plug, 2-pin
A5		SFPZB3501	Shell Weight
A6		SFVS135-02	Spindle, Manual
A7		SFVS165-01A	Spindle, Ass'y
A8		SFVS165-01Z	Spindle, EP

Ref. No.		Part No.	Part Name & Description
PACKING PARTS			
P1		SFHP335X01	Carton
P2		SFHH335-01	Pad, Front
P3		SFHH335-02	Pad, Rear
P4		SFHD335-01	Pad, Top
P5		SFHD195-02	Pad, Turntable
P6		SFHH195-04	Parts Box
P7		SFHD195-03	Pad, Top, Parts Box
P8		SFYC30A44	Polyethylene Cover, Parts Box
P9		SFYF60A60	Polyethylene Bag, Player Unit
P9-1		SFYH65X60	Polyethylene Bag, Dust Cover
P9-2		SFYH40X45	Polyethylene Bag, Turntable
P10		SFHS320-02	Spacer, Tone Arm

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